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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/742,157	12/19/2000	Naoko Iwami	16869B-016600US	9696
20350 7590 07/09/2007 TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			EXAMINER TRUONG, LAN DAI T	
			ART UNIT 2152	PAPER NUMBER
			MAIL DATE 07/09/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/742,157	Applicant(s) IWAMI ET AL.	
	Examiner Lan-Dai Thi Truong	Art Unit 2152	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23,24 and 26-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23,24 and 26-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is response to communications: application, filed 12/19/2000; amendment filed 04/27/2007. Claims 23-24, 26-45 are pending; claims 23, 29-30 are amended; claims 37-45 are added

2. The applicant's arguments filed on 04/27/2007 have fully considered. Applicant's arguments with respect to the present application (serial No. 09742157) and the Kitamura (U.S. 6,854,034) were owned by Hitachi, Ltd are persuasive. The previous rejection is withdrawn.

Claim rejections-35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 23, 30-34, 36-41 are rejected under 35 U.S.C 103(a) as being un-patentable over Blumenau et al. (U.S. 6,421,711) in view of Otterness et al. (U.S. 6,792,472)

Regarding claim 23:

Blumenau discloses the invention substantially as claimed, including a storage system, comprising:

A first I/O port for connection to a communication network; at least a second I/O port separate from the first I/O port for connection to the communication network, the first and second I/O port each receiving write requests: (Blumenau discloses data access/ and written communications between storage system and the data network are implemented through “port adapters/ virtual ports” those are equivalent to “I/O ports” as claimed: abstract; figure 1, items 35, 36; column 7, lines 18-21)

An array of media for storing information, the array comprising a plurality of disk storage units organized into a plurality of logical disks: (Blumenau’s storage system includes “RAID devices 28, 29, 30 and 31” those are equivalent to “disk storage units” as claimed, and the RAID devices are organized into a plurality of logical volumes: column 6, lines 65-67; column 7, lines 1-9, 51-64)

A plurality of data paths, each data path connectable between any one of the logical disks and any one of the I/O ports: (Blumenau discloses existing of a plurality of data paths between ports 51 and LUNs: figure 3; column 9, lines 17-45)

Configuration table that identifies the logical disks for connection with the I/O ports: (Blumenau discloses technique of creating “a Reported Luns” which shares functionality with “configuration table” as claimed for mapping between ports and “Luns” which shares functionality with “logical disks” as claimed: column 9, lines 17-42; column 12, lines 4-7; figure 5; column 28-57; column 19, lines 48-67; column 20, lines 1-17)

However Blumenau does not explicitly disclose an allocator to allocate/ and select one of the data paths based upon a data rate capability of said one data path determined from communication speed information of configuration table

In analogous art, Otterness discloses method of using “routing table” which also shares functionality with “configuration table” to determine the optimal communication paths. In Otterness’s system, selection logic is included in RAID controller for selecting an optimal path from plurality of alternative paths, see (Otterness: abstract; column 8, lines 1-15)

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Otterness’s ideas of using selection logic for selecting message path in to Blumenau ’s system in order increase communication speed for storage system, see (Otterness: abstract)

Regarding claims 30-31, 37-38, 40:

Those claims are rejected under rationale of claim 23

Regarding claims 34 and 36:

In addition to rejection in claims 23 and 30, Blumenau - Otterness further discloses configuration table includes data rate capabilities: (Blumenau discloses technique of including volume bitmap into table 8)

Regarding claims 32-33, 39 and 41:

In addition to rejection in claims 23, 30, 37, and 40 Blumenau – Otterness further discloses searching for unallocated one of the array having a sufficient data capability to match data rate capability of network connection: (Blumenau: column 2, lines 1-16)

Claims 29, 24, 26-27, 35, 42-44 are rejected under 35 U.S.C 103(a) as being unpatentable over Blumenau- Otterness in view of Mason, Jr et al. (U.S. 6,487,562)

Regarding claim 29:

In addition to rejection in claim 23, Blumenau - Otterness further discloses each I/O port having a network connection operable to connect the array to a network: (Blumenau discloses technique of configuring connections between “the host” which shares functionality with “the network” as claimed and “the port adapters” which shares functionality with “I/O ports” as claimed; therefrom the host is capable to access number of storage volumes)

However, Blumenau - Otterness does not explicitly disclose QoS of connection

In analogous art, Mason discloses method of configuring QoS for RAID system via setting parameters supporting data reading and writing speed, see (abstract; column 1, lines 14-17; column 2, lines 1-4)

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Mason’s ideas of configuring QoS for RAID system into Blumenau - Otterness’s system in order to increase efficiencies for storage system, see (Mason: column 1, lines 66-67; column 2, lines 1-4)

Regarding claims 24 and 43:

Blumenau - Otterness’s discloses the invention substantially as disclosed in claims 23 and 29, but does not explicitly teach the array having different operational characteristics

In analogous art, Mason discloses technique of setting individual logical volume/ storage device with preferred “levels of performance and services” which shares functionality with “operational characteristics” as claimed, see (Mason: abstract)

Regarding claim 26:

In addition to rejection in claim 24, Blumenau – Otterness- Mason further discloses communication speed of operation: (Mason: abstract)

Regarding claim 27:

This claim is rejected under rationale of claim 23

Regarding claims 42 and 44:

Those claims are rejected under rationale of claim 29

Regarding claim 35:

In addition to rejection in claim 29, Blumenau – Otterness- Mason further discloses configuration table includes data rate capabilities: (Blumenau discloses technique of including volume bitmap into table 8)

Claims 28 and 45 rejected under 35 U.S.C 103(a) as being un-patentable over Blumenau- Otterness –Mason in view of Chong, Jr (U.S. 6,349,357)

Regarding claims 28 and 45:

Blumenau- Otterness –Mason discloses the invention substantially as disclosed in claims 24 and 29, but does not explicitly teach guarantee bandwidth

In analogous art, Chong discloses method of creating data path for storage system based upon the required bandwidth, see (Chong: abstract)

Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine Chong's ideas of creating data path for storage system based upon the required bandwidth into Blumenau- Otterness –Mason's system in order to increase flexibilities, efficiencies for storage system, see (Chong: column 2, lines 45-59)

The prior arts made of records and not relied upon are considered pertinent to applicant's disclosure. The following patents and publications are cited to further show the state of the art with respect to "Guaranteed data access speed of a storage system": 6578108: column 4, lines 6-20; 6157991; 2002/0091710; 5884098; 6425049; 6301605; 7200666; 20020085493; 5890204; 5455934; 6157963, 5937174; 6728803; 6282197; 6845395;


Conclusions

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lan-Dai Thi Truong whose telephone number is 571-272-7959. The examiner can normally be reached on Monday- Friday from 8:30am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob A. Jaroenchonwanit can be reached on 571-272-3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

07/03/2007



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7/5/7